

Office Action Summary

Application No.

10/714,736

Applicant(s)

BOOTH ET AL.

Examiner

Behrooz Senfi

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 12/13/2007, with respect to the rejection(s) of claim(s) 1 - 23 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection mailed 10/22/2007 has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Yonemitsu et al. (US 5,155,593) and Yoneyama (US 7,106,800).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu et al. (US 5,155,593) in view of Yoneyama (US 7,106,800).

Regarding claim 1, Yonemitsu discloses, an apparatus comprising; a first circuit configured to generate a measurement of inter-picture motion between a current picture and a first reference picture (i.e., col. 4, lines 44 – col. 5, lines 6, col. 13, lines 50 – 54 and col. 14, lines 26 - 43, first movement difference detector circuit 85) and a second circuit configured to select between the first reference picture and a second reference picture as a better reference picture for motion estimation in response to the control signal (i.e. col. 14, lines 44 – 54).

Although Yonemitsu uses a comparator circuit in the first circuit to produce, e.g., generate, difference data representing the error in inter-frame coding mode, but is silent in regards to explicit of, generate a control signal in response to a predetermined threshold value.

However, Yoneyama (i.e., abstract, lines 2 – 12, fig. 1, inter-frame motion determination 102, col. 8, lines 1 – 10) teaches, generating a control signal in response to a predetermined threshold value.

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the video signal coding method of Yonemitsu in accordance with the teaching of Yoneyama, by using inter-frame motion determination section as suggested by Yoneyama, in order to decrease the frame rate by generating a control signal to control the decoding section based on the inter-frame motion, as suggested by Yoneyama (i.e., col. 14, lines 63 – 65).

Regarding claims 12 – 13, the limitations claimed have been analyzed and rejected with respect to claim 1 above.

4. Claims 2 – 9, 11 – 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu et al. (Re. 36,999) in view of Yoneyama (US 7,106,800) and Senda (US 5,719,630).

Regarding claim 2, Yonemitsu discloses, determining inter-picture motion between pictures, as discussed with respect to claim 1 above.

Yonemitsu is silent in regards to explicit of, wherein; a parity of the first reference picture is opposite to a parity of the current picture, and a parity of the second reference picture is the same as the parity of the current picture.

Senda (i.e., figs. 10 and 19, elements 71 and 72, col. 11, lines 24 – 29 and col. 19, lines 36 - 67) teaches parity of the first reference picture is opposite to a parity of the current picture, and a parity of the second reference picture is the same as the parity of the current picture, e.g., same parity field predictor 71 and different parity field predictor 72.

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the video signal coding method of Yonemitsu in accordance with the teaching of Senda, by utilizing a prediction mode determiner to reduce a circuitry scale without degradation of performance in an adaptive motion compensated predictive coding, as suggested by Senda (i.e., col. 2, lines 66 – col. 3, lines 2).

Regarding claims 2 and 14, the combination of Yonemitsu, Yoneyama and Senda teaches, wherein; a parity of the first reference picture is opposite to a parity of the current picture (i.e. fig. 10, element 72 of Senda) and a parity of the second reference picture is the same as the parity of the current picture (i.e. fig. 10, element 71 of Senda).

Regarding claims 3 and 15, the combination of Yonemitsu, Yoneyama and Senda teaches, a parity of the first reference picture is the same as a parity of the

current picture (i.e. fig. 10, element 71 of Senda) and a parity of the second reference picture is opposite to the parity of the current picture (i.e. fig. 10, element 72 of Senda).

Regarding claim 14, the limitations claimed have been analyzed and rejected with respect to claim 2 above.

Regarding claims 4 and 16, the combination of Yonemitsu, Yoneyama and Senda teaches, memory configured to store the current picture, the first reference picture and the second reference picture (i.e. fig. 7a, memories 61 – 64 of Yonemitsu, and also buffer 605 of Yoneyama and memory 25 of Senda).

Regarding claim 5, the combination of Yonemitsu, Yoneyama and Senda teaches, multiplexer circuit configured to select between the first reference picture and the second reference picture (i.e. col. 14, lines 48 – 54, of Yonemitsu, also fig. 10, selector 75 of Senda).

Regarding claims 6 and 17, the combination of Yonemitsu, Yoneyama and Senda teaches, motion estimation circuit configured to generate one or more motion vectors in response to the better reference picture and the current picture (i.e. col. 4, lines 51 - 60 of Yonemitsu, also figs. 9 – 10, MVs of Senda).

Regarding claims 7 and 18, the combination of Yonemitsu, Yoneyama and Senda teaches, a circuit configured to generate a plurality of coarse motion vectors for said current picture based upon said first reference picture (i.e., please see fig. Fig. 11, element 26, col. 5, lines 60 – 67 of Senda).

Regarding claims 8 and 19, the combination of Yonemitsu, Yoneyama and Senda teaches, wherein the first circuit further comprises: a first analysis circuit

configured to generate a measurement of inter-picture motion in response to the coarse motion vectors (i.e. please see fig. 11, element 26 of Senda).

Regarding claims 9 and 20, the combination of Yonemitsu, Yoneyama and Senda teaches, a second analysis circuit configured to generate the control signal in response to said measurement of inter-picture motion (i.e. please see fig. 11, element 27 of Senda).

Regarding claim 11, the combination of Yonemitsu, Yoneyama and Senda teaches, apparatus is part of an encoder circuit (i.e. fig. 5A of Yonemitsu).

Regarding claim 22, the combination of Yonemitsu, Yoneyama and Senda teaches, field picture (i.e. fig. 3, frame/field processing 302 of Yoneyama, also fig. 5, col. 1, lines 30 – 33 of Senda).

5. Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu et al. (US 5,155,593) in view of Yoneyama (US 7,106,800) and Adiletta (US 6,101,276).

Regarding claim 10, Yonemitsu is silent in regards to explicit of; analysis circuit is configured to perform a cluster analysis on the coarse motion vectors.

Adiletta (i.e., col. 11, lines 42 – col. 12, lines 4 and col. 21, lines 25 - 34) teaches analysis circuit is configured to perform a cluster analysis on the coarse motion vectors.

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the motion vector calculation circuit of Yonemitsu in accordance with the teaching of Adiletta by using a hierarchical

search technique and analyzing a local cluster of motion vectors as taught by Adiletta, to represent a coarse approximation which is much faster and requires less computation power than the pixel-wise, as suggested by Adiletta (i.e., col. 11, lines 52 – 54).

Regarding claim 21, the limitations claimed have been analyzed and rejected with respect to claim 10 above.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu et al. (US 5,155,593) in view of Yoneyama (US 7,106,800) and Mauro, II et al. (US 7,039,246).

Regarding claim 23, Yoneyama teaches using a predetermined threshold to determine whether it is necessary to generate a control signal to control the decoding operation (i.e., col. 8, lines 1 – 10).

Yoneyama is silent in regards to explicit of, programmable threshold.

Mauro (i.e., col. 3, lines 28 – 47) teaches the programmable threshold.

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to replace the threshold value determination section as disclosed by Yoneyama with a programmable threshold as taught by Mauro, in order to terminate the execution of various computations when the computations would be unlikely to improve the encoding suggested by Mauro (col. 2, lines 8 - 11).

Contact

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Behrooz Senfi whose telephone number is 571-272-7339. The examiner can normally be reached on M-F 7:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Behrooz Senfi
Examiner
Art Unit 2621

